

# Ichthyofaunal Composition and Seasonal Occurrence in the Bodo Creek, Niger Delta, Nigeria.

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## Abstract

The studies of Ichthyofaunal composition and seasonal occurrence in Bodo Creek, Niger Delta Nigeria were done between the months of January to July 2010. the collection of the fishes were done with fishing traps, gill and cast nets of various mesh sizes ranging from 20 – 102mm. The months of January February and March were sampled for the wet season while the months of May, June and July were sampled for the dry season to determine the seasonal occurrence of the various fish species. The upper, middle and lower courses of the creek were also accorded cognizance during fish collection to determine the spatial dynamics in species occurrence. The identification of the fish species was done with aid of keys provided by Reed et al (1979) Tobor (1978), FAO (1981) and Schneider (1990). A total of 45 fish species belonging 36 genera and 26 families were identified. The fish families; Clupeidae and Carangidae were the highest in species number recording 4 species each. The fish families Bagridae, Batrachoidae, Belonidae, Cynoglossidae, Drepanidae, Eleotridae, Elopidae, Ehipidae, Gerreidae, Monodaetylidae, Periophthalmidae, Semandidae, Soleidae, Trichiuridae and Symbrachidae were the least in species number, recording 1 species each. All 45 species occurred in all courses; upper, middle and lower. Courses all 45 species also occurred in both wet and dry season, but *Ethmalosafimbriata* and *Liza grandisquamis* were more abundant in the dry season than the wet season.

**Keywords:** Ichthyofauna, assemblage, and distribution

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## Introduction

Fish fauna is one of the most diverse group of animals known to man with more than 20,000 species in existence and exist more than all vertebrates put together. Fish is of immense value to man as an important protein source available in the tropics (Sikoki et al, 2008). The contribution of fisheries to the Nigeria economy is undisputable significant when viewed from the perspective of supply of high quality dietary and micronutrients income generation, employment creation and the enhancement of foreign exchange earning. It contributed 5.4 percent to gross domestic product in 2002 (Raji, 2007 and Nsentip, 1987)

Artisanal fisheries meet two-third of the fish demand of the Niger Delta States of Rivers, Akwalbom and Cross River, while it accounts for over 80 percent of domestic fish landing of the West African Sub-region. Nigeria's 500,000 metric tones of fish comes for the artisanal sub-sector while commercial trawling; with its steady decreasing scope in the country contributes less than 10% of the total marine catch (FAO 1981, Scott 1966, Reid, et. al 1975).

The Bodo Creek is of immense importance for providing a strong livelihood support base for the people of the area and beyond. The Creek serves for fishing and small scale aquaculture, cassava fermentation fuel wood production, water transports and disposal of domestic wastes. The bulk of periwinkle; *Trypanotonus fuscatus* traded in Bodo City, Gokana Communities and beyond are sourced from Bodo Creek (Onwugbuta-Enyiet. al 2008)

## Study Area

The Bodo Creek is located in Gokana Local Government Area in Ogoni Land Rivers State in the Niger Delta of Nigeria. The study areas has between latitude 6.<sup>0</sup>75 to 7<sup>0</sup>15N and longitude 5<sup>0</sup>31 to 5<sup>0</sup>35E with an annual rainfall of between 2,000 – 3000mm. The rainy season spans from April to November, while the short dry season spans from December to March (Onwugbuta-Enyi, et. al 2008)

The Creek comprises of two man channels namely Kpador Bara and KpadorNwezor, which link the Creek to Opobo, and adjunct between Bonny and Andoni respectively. Both the Kpador Bara and Nwezor inlets form numerous Creek lets; some of which and blindly in mangrove swamps, while some interconnect resulting into mixing flood and ebbing tidal water from both sources.

The study area is associated with some economic importance and biodiversity. Oil exploration and production takes place in the area. Agricultural activities; especially fishing and crop production are the main occupation of the inhabitants of the area.

The vegetation of Bodo Creek comprises generally of red mangroves (*Rhizophoraspp*) white mangrove (*Aviceniaafricanus*) Somemacrophytes, Niya Palm (*Nypafrusticans*) and mangrove fern (*Acrosticummaureum*)

also constitute part of the vegetation of the study area.

## Materials & Methods

**Fish Collection:** The collection of fishes was done with fish traps, gill and cost nests with mesh sizes ranging from 20 – 102mm. Various types of fishing methods and nets of various mesh sizes were applied in the fish collection process to enhance the catching of all species of fish in the Creek no matter their sizes. Water baths and a 4 litre container of formaldehyde were carried to the various landing sites for fixing of the fishers before they were put in the water baths fish.

Fishers and fish mammals were engaged in the collection process; taking cognizance of the courses (upper, middle and lower courses) from which the fishes were collected. Fish collection done in the months of January – March (dry season) were fixed with formaldehyde in labeled water – baths and beakers, taken to the laboratory. Same was done to the fishes collected in the months of May – July (wet season).

**Laboratory Procedure:** The fishes collected from various courses in the dry and wet seasons were removed from the formaldehyde treated water in the various labeled – water baths and beakers, placed on laboratory trays, rinsed with water from the laboratory taps, mobbed and cleaned with neat dry towels.

The identification of the fishes were done with keys provided by Reed, *et. al* (1979), Tobor (1978, FAO (1981) and Schneider (1990). The various fish species identified were recorded, store in labeled water baths and beakers containing water treated with formaldehyde for preservation.

## Results

**Table 1 Checklist of Fish Species of the Bodo Creek**

S/N	Fish Families	Common Name	Scientific Name
1.	Bagridae	Cat Fish	<i>Chrysichthynigrodigitus</i>
2.	Batrachoidae	Toad Fish	<i>Batrachoidesliberensis</i>
3.	Belonidae	Needle fish	<i>Strongylurasenegalensis</i>
4.	Carangidae	Jack, Moonfish	<i>Caranxlatus, caraxcrysos</i> <i>Chrocsconmbruschrysurus</i> <i>Trachinotusteraia</i>
5.	Cichlidae	Tilapias	<i>Sarotherodonmelanotheron</i> <i>Tilapia guinensis</i>
6.	Cynoglossidae	Tonguesole	<i>Cynoglossusmenody</i>
7.	Clupeidae	Sardines	<i>Ethmalosafimbriata,</i> <i>Ilishaaficana</i> <i>Sardinellaaurita</i> <i>Sardinellamadirensis</i>
8.	Drepanidae	Stock fish	<i>Drepaneafricana</i>
9.	Eleotridae	Sleepers	<i>Eleotricaficana</i>
10.	Elopidae	Lady fish	<i>Eloipslacerta</i>
11.	Epphipidae	African spadefish	<i>Chaetodipterusgoreensis</i>
12.	Gerradae	Mojarras	<i>Eucinostomusmelanopterus</i>
13.	Gobiidae	Gobies	<i>Gobioidesansorgii</i> <i>Gobioidesafricanas</i> <i>Gorogobiusnigricinatus</i>
14.	Haemilidae (Pomadasyidae)	Grinters	<i>Plectorhynchiusmacrolepis</i> <i>Pomadasyjubelini, Pomadasyperotiti</i>
15.	Lutjanidae	Red snappers	<i>Lutjanusdecaptens</i> <i>Lutjanusdentatus</i> <i>Lutjanusgoreensis</i>
16.	Monodactylidae	Finger fishes	<i>Psettiasebae</i>
17.	Mugilidae	Mullet	<i>Liza grandisquamis</i> <i>Mugilcephalus</i> <i>Liza falcipinnis</i>
18.	Periophthalmidae	Mudskipper	<i>Periophthalmuspapilio</i>
19.	Polynemidae	Threadfins	<i>Galeoidesdecadactylus</i> <i>Polydactylusquadrafilis</i>
20.	Sciaenidae	Croakers	<i>Pseudotolytus elongates</i> <i>Pseudotolithusselegalensis</i>
21.	Serranidae	White grouper	<i>Epinephelusaeneus</i>
22.	Soleidae	Soles	<i>Synapturalucitenica</i>

23.	Sphyraenidae	Bracuda Sennats	<i>Sphyraenaafra</i> <i>Sphyraenasphyraena</i>
24.	Tetradontidae	Puffer fishes	<i>Ephippionguttifer</i> <i>Lagocephaguslacrigatus</i>
25.	Trichuridae	Cutlassfish	<i>Trichiaruslapturus</i>
26.	Synbranchidae	Swampeal	<i>Synbranchussp</i>

**Table 2: Fish Species Distribution in various Courses**

S/N	Species	Upper Course	Middle Courses	Lower Course
1.	<i>C. nigrodigitalis</i>	+	+	+
2.	<i>B. liberiensis</i>	+	+	+
3.	<i>S. senegalensis</i>	+	+	+
4.	<i>C. crysos</i>	+	+	+
5.	<i>C. latus</i>	+	+	+
6.	<i>C. chrysurus</i>	+	+	+
7.	<i>T. teraia</i>	+	+	+
8.	<i>S. melanotheron</i>	+	+	+
9.	<i>T. guinensis</i>	+	+	+
10.	<i>E. fimbriata</i>	+	+	+
11.	<i>I. africana</i>	+	+	+
12.	<i>S. aurita</i>	+	+	+
13.	<i>S. madenensis</i>	+	+	+
14.	<i>C. monodi</i>	+	+	+
15.	<i>D. africana</i>	+	+	+
16.	<i>E. africana</i>	+	+	+
17.	<i>E. lacerta</i>	+	+	+
18.	<i>C. goreensis</i>	+	+	+
19.	<i>E. melanopterus</i>	+	+	+
20.	<i>G. ansorgii</i>	+	+	+
21.	<i>G. africanus</i>	+	+	+
22.	<i>G. nigricinctus</i>	+	+	+
23.	<i>P. macrotopsis</i>	+	+	+
24.	<i>P. jubelini</i>	+	+	+
25.	<i>P. peroteti</i>	+	+	+
26.	<i>L. decaptens</i>	+	+	+
27.	<i>L. dentatus</i>	+	+	+
28.	<i>L. goreensis</i>	+	+	+
29.	<i>P. sebae</i>	+	+	+
30.	<i>L. grandisquamis</i>	+	+	+
31.	<i>M. cephalus</i>	+	+	+
32.	<i>L. falcipinis</i>	+	+	+
33.	<i>P. papilio</i>	+	+	+
34.	<i>G. decadactylus</i>	+	+	+
35.	<i>P. quadrifilis</i>	+	+	+
36.	<i>P. elongatus</i>	+	+	+
37.	<i>P. senegalensis</i>	+	+	+
38.	<i>E. aeneus</i>	+	+	+
39.	<i>S. lucitanica</i>	+	+	+
40.	<i>S. agra</i>	+	+	+
41.	<i>S. sphraena</i>	+	+	+
42.	<i>E. guttifer</i>	+	+	+
43.	<i>L. laevigatus</i>	+	+	+
44.	<i>T. lepturus</i>	+	+	+
45.	<i>Symbracussp</i>	+	+	+
		+	=	Present
		-	=	Absent

**Table 3: Seasonal Occurrence of Fish species in Bodo Creek**

S/N	Fish Species	Dry Season	Wet Season
1.	<i>C. nigrodigitalis</i>	+	+
2.	<i>B. liberiensis</i>	+	+
3.	<i>S. senegalensis</i>	+	+
4.	<i>C. crysos</i>	+	+
5.	<i>C. latus</i>	+	+
6.	<i>C. chrysurus</i>	+	+
7.	<i>T. teraia</i>	+	+
8.	<i>S. melanotheron</i>	+	+
9.	<i>T. guinensis</i>	+	+
10.	<i>E. fimbriata</i>	+	+
11.	<i>I. africana</i>	+	+
12.	<i>S. aurita</i>	+	+
13.	<i>S. madenensis</i>	+	+
14.	<i>C. monodi</i>	+	+
15.	<i>D. africana</i>	+	+
16.	<i>E. africana</i>	+	+
17.	<i>E. lacerta</i>	+	+
18.	<i>C. goreensis</i>	+	+
19.	<i>E. melanopterus</i>	+	+
20.	<i>G. ansorgii</i>	+	+
21.	<i>G. africanus</i>	+	+
22.	<i>G. nigrincinctus</i>	+	+
23.	<i>P. macrotopsis</i>	+	+
24.	<i>P. jubelini</i>	+	+
25.	<i>P. peroteti</i>	+	+
26.	<i>L. decaptens</i>	+	+
27.	<i>L. dentatus</i>	+	+
28.	<i>L. goreensis</i>	+	+
29.	<i>P. sebae</i>	+	+
30.	<i>L. grandisquamis</i>	+	+
31.	<i>M. cephalus</i>	+	+
32.	<i>L. falcipinis</i>	+	+
33.	<i>P. papilio</i>	+	+
34.	<i>G. decadactylus</i>	+	+
35.	<i>P. quadrifilis</i>	+	+
36.	<i>P. elongatus</i>	+	+
37.	<i>P. senegalensis</i>	+	+
38.	<i>E. aeneus</i>	+	+
39.	<i>S. lucitanica</i>	+	+
40.	<i>S. agra</i>	+	+
41.	<i>S. sphraena</i>	+	+
42.	<i>E. guttifer</i>	+	+
43.	<i>L. laevigatus</i>	+	+
44.	<i>T. lepturus</i>	+	+
45.	<i>Symbracussp</i>	+	+
		+	= Present
		-	= Absent

### Discussion

The ichthyofaunal composition of the Bodo Creek of 45 species and 36 genera belonging to 26 families recorded for the body in the study compares favourably with those of brackish water systems (Francis & Sikoki, 2003).

The fish families clupeidae and carangidae were the highest in species number of four (4) each. Clupeidae (the sardines) recorded four species namely: *Ethmalosafimbriata*, *Ilishaaficana*, *Sardinellaaurita* and *Sardinellamadinensis*. Carangidae (The Jacks, Moonfish) recorded four (4) species namely: *Caranxlatus*, *Caranxcrysos*, *Chloroscombuschrysurus* and *Trachinotusteraia*. The fish families Gobiidae, Haemulidae, Mugilidae and Lutjanidae were next in high species number of three (3) each.

The lower Bonny River in the Niger Delta of Nigeria recorded 57 fish species belonging to 25 families

(Chinda, 1994). Francis and Sikoki, 2003), working in the nearby Andoni River System also in the Niger Delta Area of Nigeria recorded 64 fish species from 25 families. The observation difference between the ichthyofaunistic composition of the Bodo Creek and the nearby Andoni River System may not be unconnected with the sampling duration and season.

The relatively more abundance of the families Clupeidae, Carangidae, Haemulidae, Lutjanidae and Mugilidae agrees with Sikoki and Francis (2007) who referred to them as marine migrants that abound in estuaries for the purpose of feeding, shelter before returning to the sea for breeding.

The occurrence of all fish species in the dry and wet seasons may not be unconnected with the tidal system of the creek, the physiological and ecological needs of the fish. Though all fish species occurred in both seasons, some species such as *Ethmalosa fimbriata* and *Liza grandisquamis* occurred more in the dry season than the wet season.

### Conclusion

The fish species that occurred in the Bodo Creek is evident that it is brackish water system. A total of 45 fish species belonging to 36 genera and 26 families was recorded as the ichthyofaunal composition of the creek. The fish in the creek occurred in both wet and dry seasons. Though some were more in wet season than the dry season. The fish families Clupeidae, Carangidae and Mugilidae were the highest in species number occurrence.

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